

Abstract

In the transverse type induction heating apparatus in which a material 1 to be rolled is heated by inductors 2 and 3 to which electric power is supplied from an AC power source 4, iron core widths of the inductors 2 and 3 in a plate width direction of the material 1 to be rolled are made smaller than a plate width of the material 1 to be rolled, they are disposed on a plate width center line of the material 1 to be rolled, and when a current penetration depth is made δ (m), a specific resistance of the material 1 to be rolled is made ρ ($\Omega\text{-m}$), a magnetic permeability of the material 1 to be rolled is made μ (H/m), a heating frequency of the AC power source 4 is made f (Hz), a circular constant is made π , and a plate thickness of the material 1 to be rolled is made t_w (m), the heating frequency of the AC power source 4 is set to cause the current penetration depth δ of expression (1) to satisfy expression (2)

$$\delta = \{\rho / (\mu \cdot f \cdot \pi)\}^{1/2} \quad \cdots (1)$$

$$(t_w / \delta) < 0.95 \quad \cdots (2).$$